ADDENDUM # 4

CITY OF TORRANCE
3031 Torrance Blvd.
Torrance, CA 90503

BID NO. B2013-04

Bid for Replacement of the Bus Wash and Vacuum Systems at the City Yard

ADDENDUM # 4

THE FOLLOWING CHANGES ARE HEREBY INCORPORATED INTO AND MADE A MANDATORY PART OF SUBJECT BID:

Bid opening is changed to **Thursday, March 21st by 2:00 PM** in the City Clerk's office.

The following are questions that were asked during the bidding period, answers are in **bold.**

1. The recent addendum listed Euro Vac as an approved bus vacuum supplier. I would appreciate clarification as to whether or not automatic festoon technology is still being required which will answer whether or not hose reels are still considered unacceptable.

We are accepting (as equal) the Eurovac vacuum system as submitted, including the hose reel system.

2. A 60 hp motor requiring a 100 amp electrical service is needed to provide simultaneous vacuuming with a 13,000 fpm lance opening pick-up velocity on both cleaning lanes as stated in the attached Vacuum System Scope of Work specifications in the General and Performance sections.

   Per addendum, # 3, the available power for the vacuum system is 480 volt, 80 amps. Will the bidder be required to upgrade the panel as part of their bid?

No, if an upgrade to the electrical is required that will be contracted separately by the City.

3. In regards to electrical power, there is a 100 amp main breaker supplying the wash pad. The specification requests equipment that would require approximately 138 amps.

   Please verify there is only 100 amps available, and if so, will a system without blowers be acceptable?

There is 480 volts and 70 amp fuses within a 100 amp fusible disconnect supplying the wash pad. No the system will need to have blowers. If an upgrade to the electrical is required that will be contracted separately by the City.

Substitutions:
For clarification purposes, attached is the equipment information on the previously approved substitutions noted in Addendum #3 for both the bus wash and vacuum systems.

March 13, 2013

Please return this addendum with your bid proposal.
I hereby acknowledge receipt of this addendum.

_____
Name of Company

_____
Address

_____
City State Zip Code

CITY OF TORRANCE
3031 Torrance Blvd.
Torrance, CA 90503

Bid for Bus Wash and Vacuum Systems at the City yard

DATE 03/01/2013

Review of the Robertson Lance button switches

[X] Reviewed

[ ] Corrections noted

[ ] Action not required

[ ] Revise & resubmit

[X] Approved as equal

[ ] Not equal

Reviewed by Art Estrada

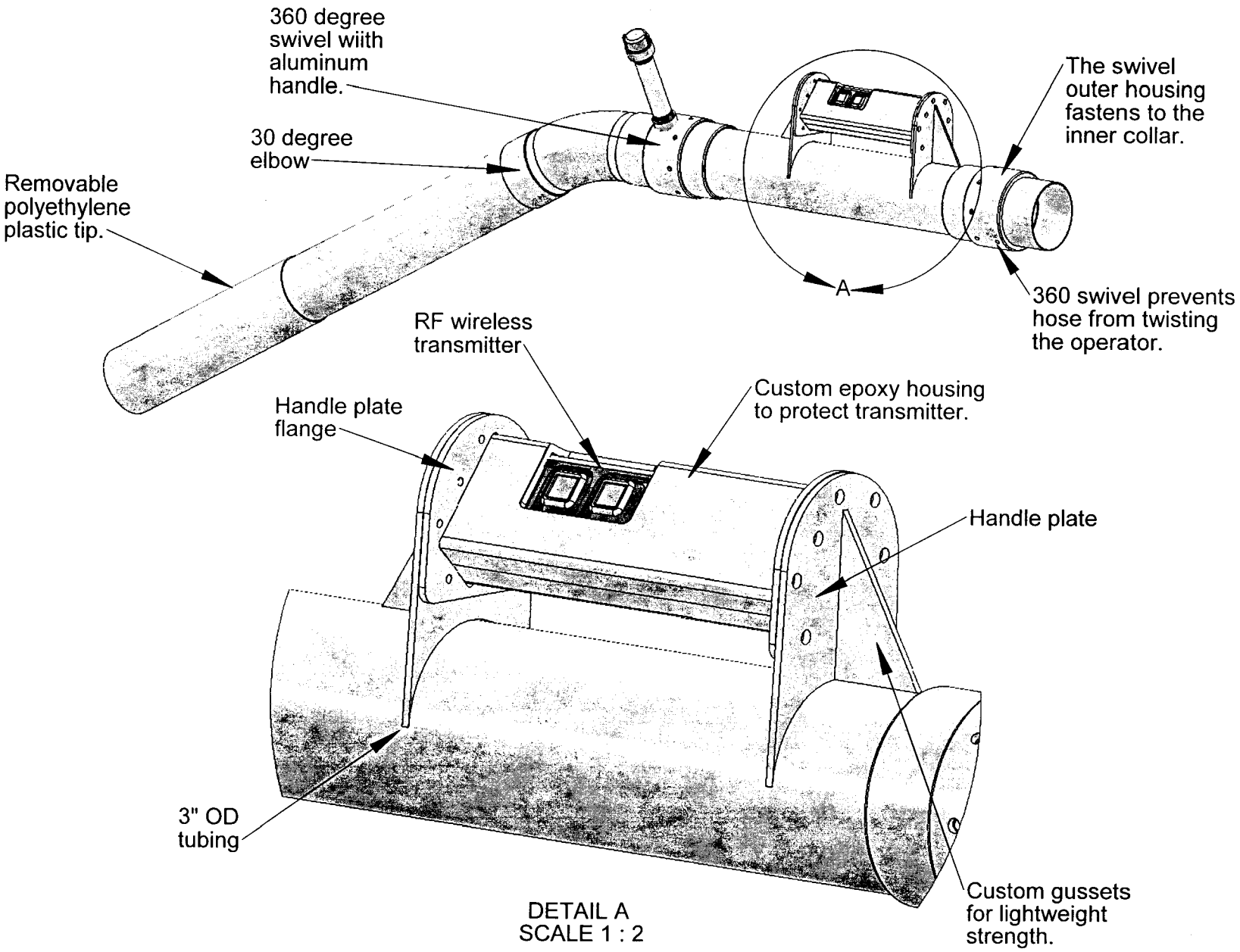
Question for Review

Request to add Radio Frequency transmitted lance button?

Review Notes

The Robertson Air Modification of the Lance button switches qualify as approved equal.

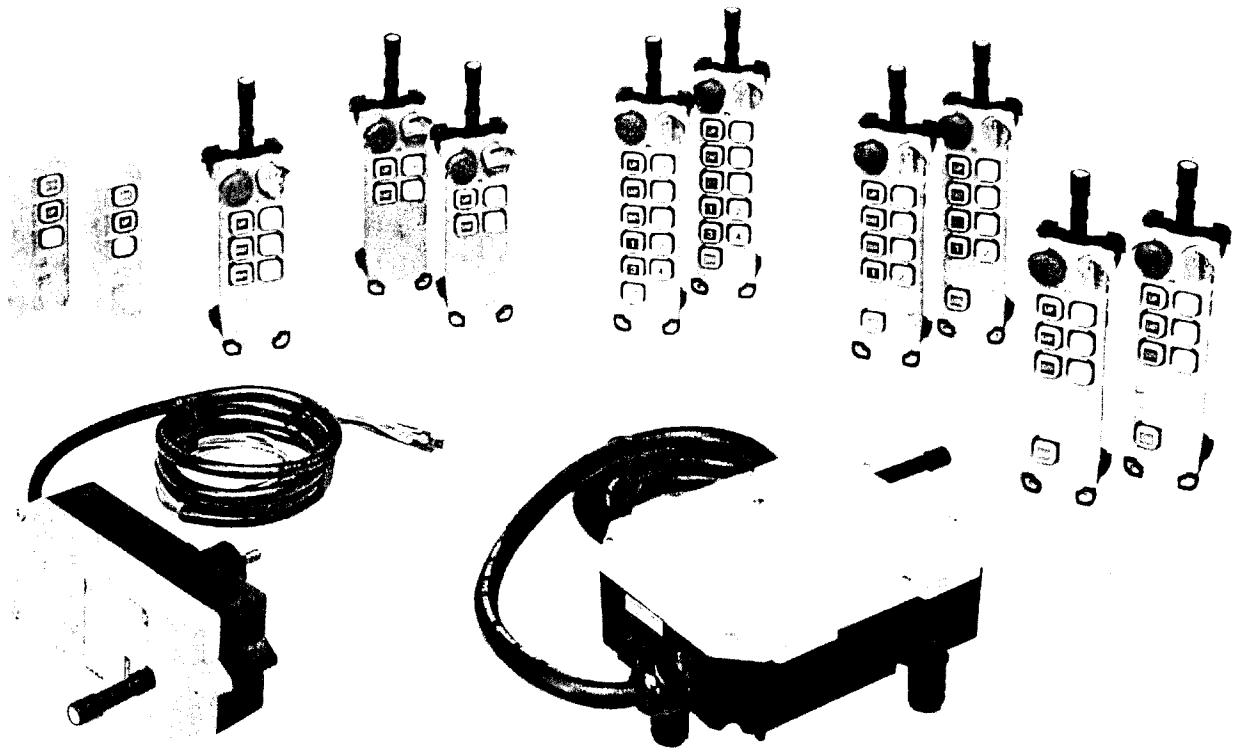
This review is only for general conformance with the design concept of the project and the information of the Bid Document. Corrections or comments made on the submittal during this review does not relieve the bidder from compliance with requirements of the Bid Specifications.



Lightweight 3" Aluminum Lance

Industrial
Radio Remote Controls

TELECRANE™
F21 Series and F24 Series



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• Monorails • Truck Equipment and Other Industrial Applications •

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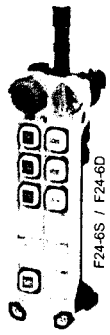
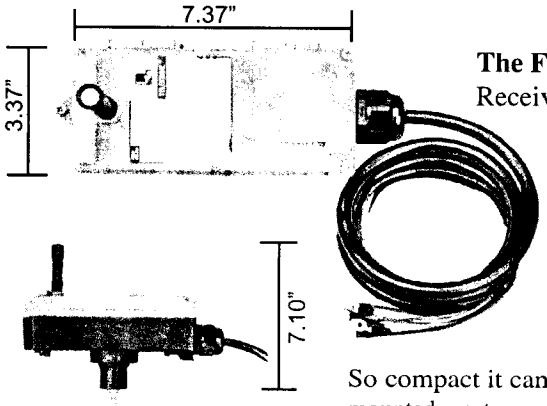
F21 SERIES

F24 SERIES



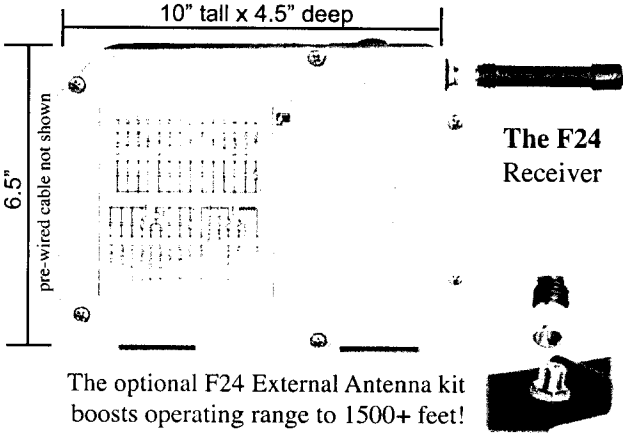
TECHNICAL SPECIFICATIONS

Transmitter	F21-2S / F21-2D	F21-4S / F21-4D	F21-6S	F24-6S / F24-6D	F24-8S / F24-8D	F24-10S / F24-10D
Dimensions	5.2" x 1.75" x .9"	6.2" x 2.4" x 2"	6.2" x 2.4" x 2"	7.25" x 2.4" x 2"	7.25" x 2.4" x 2"	7.25" x 2.4" x 2"
Weight	5 ounces	9 ounces	9 ounces	11 ounces	11 ounces	11 ounces
Operational Distance	Up to 150 feet	Up to 250 feet	Up to 250 feet	Up to 500 feet	Up to 500 feet	Up to 500 feet



The F21 Receiver

So compact it can be mounted most anywhere!



The F24 Receiver

The optional F24 External Antenna kit boosts operating range to 1500+ feet!

GENERAL SPECIFICATIONS

for both F21 & F24 series

Frequencies Available: 310-320Mhz and 428-440Mhz, 76 Channels, Generated by Crystal • Environmental Rating: IP 65 • Temperature Rating: -31°F to 167°F (-35°C to 75°C) • Power Supply Input (X1 & X2): 110/220 V AC or 12-24 V AC/DC • Relays rated at 10amps / 250VAC • Receivers pre-cabled • Transmitters have removable on/off safety key • Main line relay engaged on start, except F21-2S & 2D styles: mainline engaged on any button pressed • Transmitter Case Material: Shock resistant, fiber reinforced nylon • Transmitter Power Source: 2 "AA" Alkaline batteries • Buttons tested to 2 Million Cycles • Transmitter Battery Indication: LED

FCC Certified – No License Required

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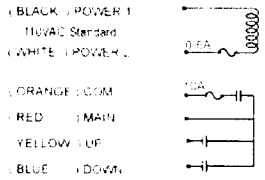
...for you to enable your equipment with wireless remote control. Upon opening its doors in 1991, Intercontinental Technologies, Ltd. (ITL) set out to make radio remote control installation ***inexpensive***, simple, and easy to understand. As a ***market leader*** in radio remote control innovation we've led the way in making remote controlling industrial equipment ***faster, safer, and easier.*** You'll be happy to know that our products are almost always in stock – ***ready for delivery*** and our service department is known for its friendly help and quick turnaround! Call an ITL staff member today to fulfill *your* application needs.....1-800-382-3558. Thank You!

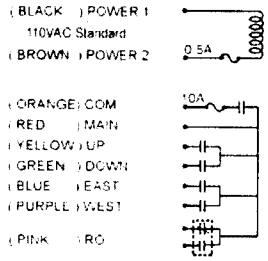
Telecrane® Systems are easy to connect!

Wiring diagrams below • Contact us if you have any questions:
TEL 847-426-9597 • FAX 847-426-9724 • www.telecrane.com

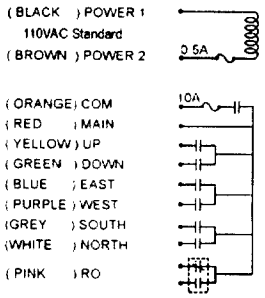
F21•2S



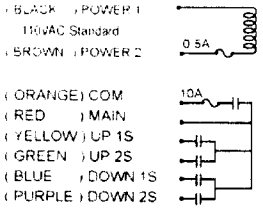
F21•4S



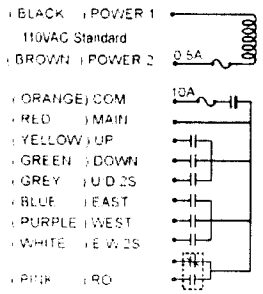
F21•6S



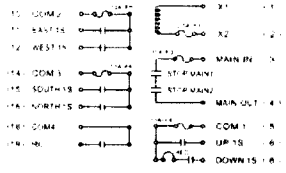
F21•2D



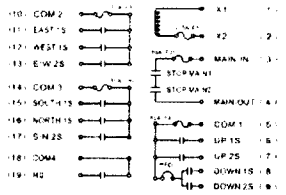
F21•4D



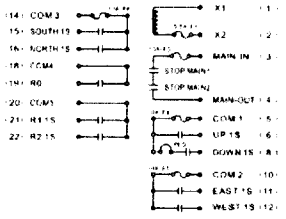
F24•6S



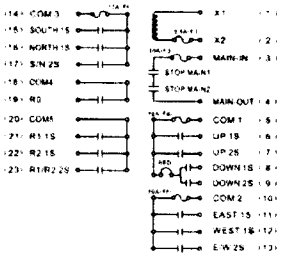
F24•6D



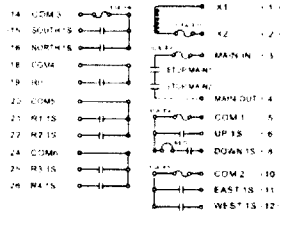
F24•8S



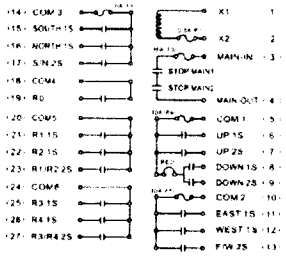
F24•8D



F24•10S



F24•10D



For **button/relay programmability** see manual or visit: www.telecrane.com

ITL INTERCONTINENTAL TECHNOLOGIES, LTD

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ITL Customers Write In

I would like to take this opportunity to tell you, we greatly appreciate all the hard work that your sales service staff does for our company...very impressed by your courteous employees, quality service, quick repairs, excellent processing of paperwork and the extra mile your company is willing to go...look forward to another prosperous year working with you.

After using many different radios and troubleshooting them, we have found Telecrane to be the most reliable...we have the installation time down to less than 2 hours. These are very dependable units...we have them in all various environments.

Distributor from North Carolina

Getting the **Versatility** and **Functionality** you need...has never been easier!

COMPLETE F21 and F24 SYSTEMS

Model	Typical Application	# of Buttons & Steps	Control Voltage	# of Transmitters
F21-2S	Hoist, winches, lifts, doors, conveyors, etc...	2 buttons, 1 step	110/220 V AC	1
F21-2S-DC	Truck equipment, winches, hoists, etc...	2 buttons, 1 step	12-24 V AC/DC	1
F21-2S-2TX	Hoist, winch, lifts, doors, conveyors, etc...	2 buttons, 1 step	110/220 V AC	2
F21-2S-DC-2TX	Truck equipment, winches, hoists, etc...	2 buttons, 1 step	12-24 V AC/DC	2
F21-4S	Monorails, dual hoists, etc...	4 buttons, 1 step	110/220 V AC	1
F21-4S-DC	Truck equipment, monorails, dual hoists, etc...	4 buttons, 1 step	12-24 V AC/DC	1
F21-4S-2TX	Monorails, dual hoists, etc...	4 buttons, 1 step	110/220 V AC	2
F21-4S-DC-2TX	Truck equipment, monorails, dual hoists, etc...	4 buttons, 1 step	12-24 V AC/DC	2
F21-2D	Hoists, lifts, etc...	2 buttons, 2 step	110/220 V AC	1
F21-2D-DC	Truck equipment, hoists, lifts, etc...	2 buttons, 2 step	12-24 V AC/DC	1
F21-2D-2TX	Hoists, lifts, etc...	2 buttons, 2 step	110/220 V AC	2
F21-2D-DC-2TX	Truck equipment, hoists, lifts, etc...	2 buttons, 2 step	12-24 V AC/DC	2
F21-4D	Monorails, dual hoists, etc...	4 buttons, 2 step	110/220 V AC	1
F21-4D-DC	Truck equipment, monorails, dual hoists, etc...	4 buttons, 2 step	12-24 V AC/DC	1
F21-4D-2TX	Monorails, dual hoists, etc...	4 buttons, 2 step	110/220 V AC	2
F21-4D-DC-2TX	Truck equipment, monorails, dual hoists, etc...	4 buttons, 2 step	12-24 V AC/DC	2
F21-6S	Overhead cranes, dual hoist monorails, etc...	6 buttons, 1 step	110/220 V AC	1
F21-6S-DC	Truck equipment, dual hoist monorails, etc...	6 buttons, 1 step	12-24 V AC/DC	1
F21-6S-2TX	Overhead cranes, dual hoist monorails, etc...	6 buttons, 1 step	110/220 V AC	2
F21-6S-DC-2TX	Truck equipment, dual hoist monorails, etc...	6 buttons, 1 step	12-24 V AC/DC	2
F24-6S	Overhead cranes, dual hoist monorails, etc...	6 buttons, 1 step	110/220 V AC	2
F24-6D	Overhead cranes, dual hoist monorails, etc...	6 buttons, 2 step	110/220 V AC	2
F24-8S	Overhead cranes with A, B, A+B	8 buttons, 1 step	110/220 V AC	2
F24-8D	Overhead cranes with A, B, A+B	8 buttons, 2 step	110/220 V AC	2
F24-10S	Multiple overhead cranes and hoists	10 buttons, 1 step	110/220 V AC	2
F24-10D	Multiple overhead cranes and hoists	10 buttons, 2 step	110/220 V AC	2

ITL can provide solutions for more complex applications – Please call to discuss your specific needs: ***800 • 382 • 3558***

F21 and F24 Replacement and Spare TRANSMITTERS

Transmitter					
F21-2S-TX	works with the following systems:	F21-2S,	F21-2S-2TX,	F21-2S-DC,	F21-2S-DC-2TX
F21-4S-TX	works with the following systems:	F21-4S,	F21-4S-2TX,	F21-4S-DC,	F21-4S-DC-2TX
F21-2D-TX	works with the following systems:	F21-2D,	F21-2D-2TX,	F21-2D-DC,	F21-2D-DC-2TX
F21-4D-TX	works with the following systems:	F21-4D,	F21-4D-2TX,	F21-4D-DC,	F21-4D-DC-2TX
F21-6S-TX	works with the following systems:	F21-6S,	F21-6S-2TX,	F21-6S-DC,	F21-6S-DC-2TX

F24-6S -TX	for use with	F24-6S	system
F24-6D -TX	for use with	F24-6D	system
F24-8S -TX	for use with	F24-8S	system
F24-8D -TX	for use with	F24-8D	system
F24-10S-TX	for use with	F24-10S	system
F24-10D-TX	for use with	F24-10D	system

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CITY OF TORRANCE
3031 Torrance Blvd.
Torrance, CA 90503

Bid for Bus Wash and Vacuum Systems at the City Yard

DATE 3/5/2013

Review of the Westmatics bus wash systems and Eurovac vacuum System

[X] Reviewed

[X] Corrections noted

[ ] Action not required

[X] Revise & resubmit

[ ] Approved as equal

[X] Not equal

Reviewed by Art Estrada

Question for Review

Please review the submitted Westmatic bus wash specifications and EuroVac specifications? for approved equals.

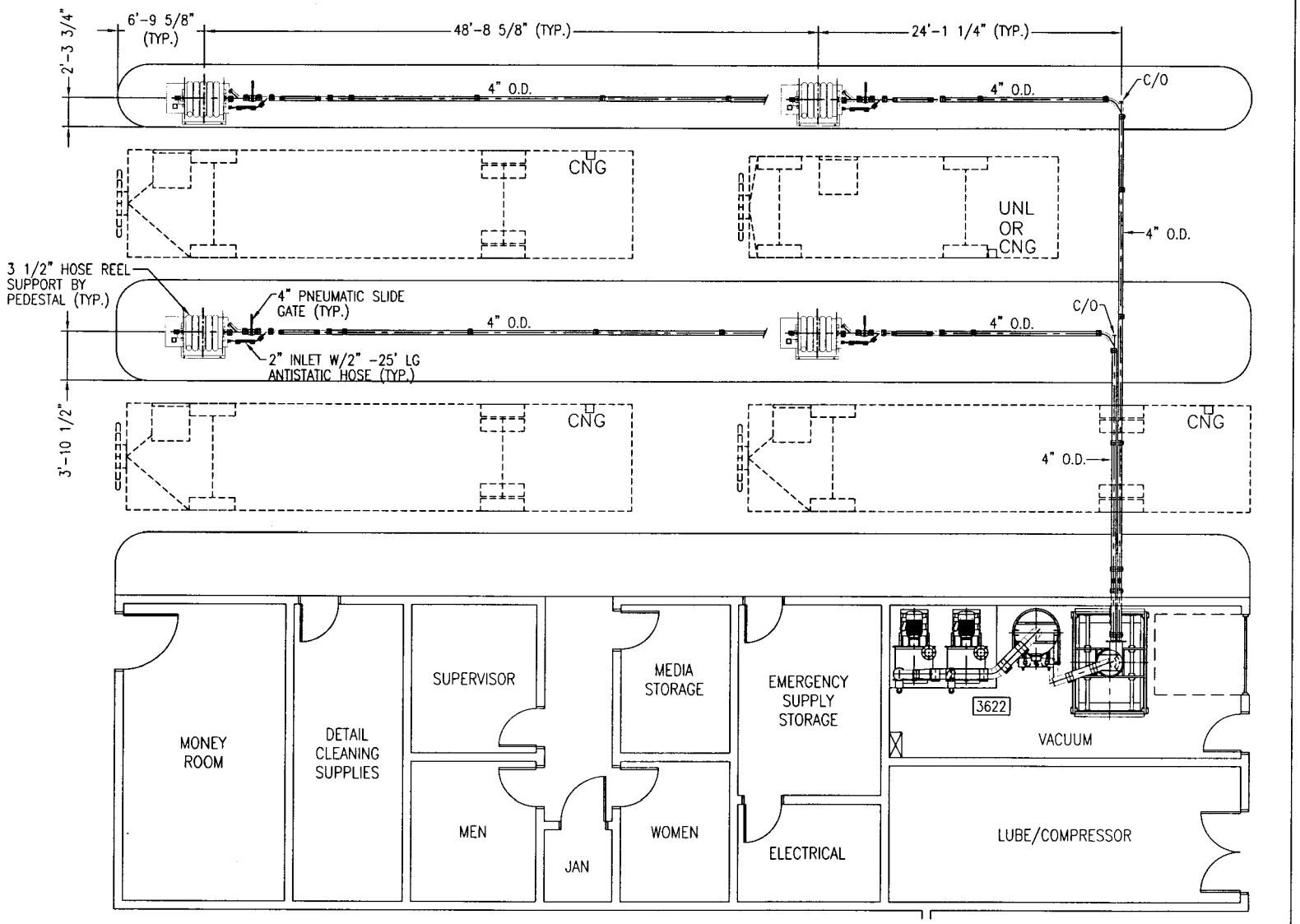
Review Notes

At this time I'm forced say that Westmatics Specification does not qualify as an equal, due in part to the material used for the framing of the component arches.

Reason: Our bus wash is an exposed open air system, our location is only a couple of miles away from the Pacific Ocean. The galvanization will eventually begin to wash away from the system's framing and will start to corrode prematurely. The Zinc in the in the galvanization coating can potentially end up in the storm drain system. Which not the very good for our Best Management Practices (BPMs).

→ **Euro Vac specification does qualify as an equal sysyerm.**

This review is only for general conformance with the design concept of the project and the information of the Bid Document. Corrections or comments made on the submittal during this review does not relieve the bidder from compliance with requirements of the Bid Specifications.



CLEAN AIR TECHNOLOGIES

TEL: 1-800-265-3878 www.eurovac.com

NOTES:

1. ALL LOCATIONS AND DISTANCES ARE APPROX.
2. PULSE JET SEPARATORS REQUIRE 3/4" AIR DOWN, TO BE CONNECTED TO RESERVOIR TANK OF SEPARATOR BY OTHERS, MUST BE CLEAN, DRY, FILTERED AIR.
3. CUSTOMER TO VERIFY THE FOLLOWING:
   a) ALL LOCATIONS
   b) ALL DISTANCES
   c) BUILDING ELEVATION AND ACCESS
   d) LINE VOLTAGE

REVISIONS		
REV.	DESCRIPTION	DATE

NO.	ISSUE DESCRIPTION	DATE

PROJECT: GENERIC LAYOUT - DOUBLE LANE WITH 4 HOSE REELS

SHEET TITLE: GENERAL LAYOUT

DRAWN BY:	CHECKED BY:	APPROVED BY:
C.B.	F.B.	-

DATE:	ORDER NO.:
-	-
SCALE: 1:96	PROJECT NO.: -
SHEET: 1 OF 1	DWG. NO.: TRA DL 4HR-01

Division 11000 - Equipment
Bus Vacuum System
(Two Lanes/Four Hose Reels)

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this section.

1.02 WORK INCLUDED

A. Base Bid:

1. General Contractor Provide/Manufacturer: One complete Bus Vacuum System with four remote hose reel, in accordance with the following technical specification.

B. Scope

1. Intent of these specifications and drawings is to establish quality and performance level for design, materials, durability, and workmanship of the Bus Vacuum System and components.

2. Bidders must conform strictly to these specifications in their bid.

3. The layout plans and details for Bus Vacuum System shown on drawings and specified herein were prepared for a system as manufactured by Clean Air Technologies O/A Eurovac. (800)-265-3878
4. General Contractor and Bus Vacuum System Manufacturer/ Supplier are responsible for providing electrical and mechanical coordination for complete and operable system.
5. Bidder to indicate on Bid Proposal Form the Bus Vacuum System Manufacturer that will be used on the project.

1.03 RELATED SECTIONS

A. Division 15000 – Mechanical
B. Division 16000 - Electrical

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who is an authorized representative or employee of the Bus Vacuum System manufacturer for both the installation and maintenance of the type of equipment required for this Project.
B. Manufacturer Qualifications: Firm experienced in manufacturing for Bus Vacuum Systems with a minimum of 5 systems in operation to this specification and that have a record of successful in-service performance for five years or more.
C. Electrical Component Standard: Provide components that comply with NFPA 70 "National Electrical Code" and are listed and labeled by U.L, CSA or ETL.
D. Design concept: The Drawings indicate the size, profiles and dimensional requirements of each for Bus Vacuum System component and are based on the specific type and models indicated. Individual components by other manufacturers may be considered provided they meet the qualifications listed and do not change the design concept as judged by the Architect. The burden of proof of equality is on the proposer.

1.05 SUBMITTALS

A. Product Data: Restrict submitted material to pertinent data. For instance, do not include manufacturer's complete catalog when pertinent information is located on a single page.

B. Operation and Maintenance Manual:
   1. Provide: Complete parts, operating and maintenance manual covering equipment at time of installation including, but not limited to:

      a. Description of system and components.
      b. Layout drawings of piping and equipment locations specific to this project.
      c. Schematic diagrams of electrical, plumbing and compressed air systems.
      d. Manufacturer's printed operating instructions.
      e. Printed listing of periodic preventive maintenance items and recommended frequency required to validate warranties. Failure to provide maintenance information will indicate that preventative maintenance is not a condition for validation of warranties.
      f. List of original manufacturer's parts, including suppliers' part numbers and cuts, recommended spare parts stockage quantity and local parts service source.

   2. Assemble and provide copies of manual in 8 ½ by 11 inch format. Foldout diagrams and illustrations are acceptable. Manual to be reproducible by dry copy method. Provide copies per provisions of Division 1 – General Requirements.

C. Shop Drawings: Submit Shop Drawings in accordance with Division 1 – General Requirements of these specifications.

1.06 PRODUCT SUBSTITUTIONS

A. Follow requirements specified in Division 1 -General Requirements.

B. Additional costs resulting from substitution of products other than those specified, by model number, including drawing changes and construction, will be at the expense of the Contractor.

C. Substitution Approval: Prior to delivery or installation, submittals for each equipment item by Equipment Identifier shall be provided in accordance with Division 1 - General Requirements. Acceptance will be based on the technical requirements herein as determined by Owner and Architect.

1.07 WARRANTY

A. Warrant work specified herein for one year from acceptance by Owner against defects in materials, function and workmanship.

B. Warranty shall include materials and labor necessary to correct defects.

C. Defects shall include, but not be limited to noisy, rough or substandard operation; loose, damaged, and missing parts; and abnormal deterioration of finish.

D. Submit warranties in accordance with Division I -General Requirements of these specifications.

E. All parts must be readily available by the manufacture.

1.08 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver equipment in manufacturer's containers appropriately packaged and/or crated for protection during domestic shipment and in humid, dusty conditions.

B. Indelibly label all containers, including those contained in others, on outside with item description(s) per title of this specification.

C. Provide equipment with materials specified complete in one shipment for each equipment item. Split or partial shipments are not permissible.

1.09 LABELING

A. Manufacturer will securely attach in a prominent location on each major item of equipment a noncorrosive nameplate showing manufacturer's name, address, model number, serial number, and pertinent utility or operating data.

B. All electrical equipment and materials shall be new and shall be listed by certified North American Underwriter (U.L, CSA or ETL) in categories for which standards have been set by that agency and labeled as such in the manufacturer's plant.

1.10 CODES AND STANDARDS

A. All work and materials shall be in accordance with the requirements of all applicable local codes; ordinances, rules and regulations of all authorities have jurisdiction. Nothing on the drawings and specifications shall be construed to permit work not in conformance with these rules and regulations.

PART 2 - PRODUCTS

2.01 VACUUM SYSTEM, FOUR STATIONS

A. ACCEPTABLE MANUFACTURERS

1. Prime Manufacturers: Subject to compliance with requirements, provide complete Bus Vacuum System with FOUR remote hose reels by the following:

   a. Clean Air Technologies Q/A Eurovac (800-265-3878)

   a. Model: # SYS-THR-24426-4

2. Alternate manufactures: Contingent upon compliance with these specifications and documentation requirements set forth in QUALITY INSURANCE and SUBMITTALS, equipment produced by other manufactures may be considered as equal.

2.02 GENERAL DESCRIPTION

A. Operation: the system shall be a central vacuum system designed for coarse and fine cleaning of all types of transit vehicles, buses, vans, cars, and trucks. The system shall be capable of handling wet or dry refuse. The system shall be able to collect course refuse like mud, leaves, sand, papers, wrappers and transfers from grooved bus floors and drivers area while preventing fine dust from contaminating electrical or mechanical components. The system shall be capable of fine cleaning such areas as radio compartments, electronic destination sign area, wheelchair lifts, and fare boxes, etc. without causing damage to the components. The system shall be complete with vacuum pumps, coarse and fine filters, refuse container (dumpster type), remote controlled hose reels, automatic air valving, piping and programmable logic controller type electrical system. The system shall have 2 inch and 3 1/2 inch cleaning lances complete with attachments at each workstation. The system shall be sized to handle the simultaneous cleaning operations of four (4) 3 ½" cleaning lances and pneumatically transporting coarse and fine refuse to a central container. Bus

cleaning system shall be capable of performing the cleaning operation within the normal five (5) to eight (8) minute cleaning cycle time. The Contractor or manufacturer shall provide all material, equipment, labor, services and incidentals for a complete installation.

B. Capacities/Dimensions:

1. Vacuum pump:
    a. Motor: 230/460 VAC, 3 phase, 60 HP
    b. Maximum airflow: 1860 CFM at 7" mercury **(operating; not maximum)**
    c. Inlet diameter: 8 inches, minimum
    d. Maximum sound level: 82 dbA at 10 feet

2. Pre-Separator:

    a. Inlet size – 4" minimum
    b. Dumpster capacity: 3 cubic yards

3. Filter Separator:

    a. Efficiency: 99.93 percent at 1 micron
    b. Area: 420 square feet, minimum

4. Hose reels:

    a. Motor: 230/460 VAC, 3 phase, ¾ HP
    b. Three inch hose length: 50 feet, minimum
    c. Two inch hose length: 25 feet, minimum

C. Major Components: Complete system shall include the following major components.

1. **Vacuum pump:** The Centrifugal multi-stage vacuum pumps shall be 422E60 or approved equal by A/E meeting all qualifications listed. The vacuum pumps shall be (1) one 60 HP, each producing 1860 CFM at 7" inches of mercury, rated for 1,500 hours continuous duty between lubrication. The vacuum pump shall be of a fabricated welded construction housing, direct drive" outboard (4) four bearing" design where by the motor and the multi-stage pump shaft is joined by a flex coupling. Vacuum pumps having cast ends with tie rods holding the stages together and single stage high pressure fans or belt driven fans are not acceptable. The pump shall be equipped with an electronic surge control which automatically bleeds air into the system by way of a motorized butterfly damper controlled by a PLC programmable control panel. A motor thermal safety protector shall be incorporated at a maximum setting of 120°C. The pumps shall operate at 230/460 V, 3-phase, 60 Hz power.

2. **Pre-Separator:** The pre-separator shall be PRS24-4 or approved equal by A/E meeting all qualifications listed. An in line cyclone pre-separator shall have a clean-out door on the unit for easy inspection and maintenance. The inlet size shall be a minimum of 4 inch diameter. Two (2) dumpsters with a minimum capacity of 4 cubic yards shall be furnished. The dumpsters shall be able to be picked up and unloaded by the disposal service currently used by transit authority. The dumpster lid and Dumpster body shall be separate units. The pre-separator shall be permanently connected to the dumpster lid. The dumpster lift lid mechanism shall include an adjustment manifold for centering the dumpster lid to the dumpster body. The dumpster lid shall be attached to the pre-separator with an air operated lift mechanism using four air cylinders controlled by a manually operated valve control to allow the dumpster to be easily and quickly removed. Dumpster seal shall be constructed of 100% memory retention material. A viewing window, to determine the level of debris accumulation, shall be provided with a minimum 100sq inches viewing area, no less than ¼ inch thickness. The dumpster shall be equipped with High-grade steel caster wheels, two fixed and two swivels with locking brakes for easy rolling. The wheels shall be so designed to allow for use of an optional track aligning system, without additional modification. Color of dumpster shall match the main equipment with a minimum 6 mil dry film thickness. Dumpster shall withstand a minimum vacuum of -8.5 inches of mercury.

3. **Filter Unit:** The filter unit shall be PJS42-6 or approved equal by A/E with all of the qualifications listed. The filter shall be a cyclone type filter and operate in two stages, primary filtration in the cyclone and secondary filtration with the cylindrical pleated polyester cartridge filter. The service life of the pleated polyester cartridge filter shall be a minimum of 12 months. The unit shall have a minimum of 420sq ft. area. The efficiency of the filter shall be 99.93% efficient to 3 micron DIN24184/3 with aerosol #3. the filter shall be capable of self-cleaning by compressed air, reverse pulse, automatically and manually.

4. **Piping and Fittings:** Piping shall be galvanized carbon steel piping, joints, fittings, valves, coupling seals and adapter for the complete operable installation. Pipe diameter at the gross refuse pickup point shall be a minimum of 4 inches with 2 inches for fine cleaning. Minimum ducting diameter shall be 4.inch; all ducting size shall be detailed and indicate cleanout locations on the installation drawings. A minimum of 5500 FPM shall be maintained in the main duct lines to prevent any refuge settlement. Seals shall be rubber butt type. All joints, valves, couplings, adapters and fittings shall be leak-free.

5. **Work Stations:** The two (2) bus lane shall be equipped with four hose reel work station, located at the front and the rear door of a typical transit bus. Final location to be approved by the representatives of the transit authority.

    a. The four (4) hose reel work station located at the front and back door of a typical transit bus, shall have one fifty (50) foot minimum 3 1/2 inch diameter type heavy-duty vacuum hose. The work station on the hose reel shall be remote controlled "IN" and "OUT" by a control unit mounted on the cleaning lance with a protective cover to prevent damage. The hose shall be mounted on a motorized hose reel VHR-P35 or approved equal by A/E, powered with a minimum 3/4 HP, 230/460 volt enclosed gear motor. The reel drum shall be of **stainless steel** welded to two (2) 16 gauge steel ends, with hose guides and not to exceed 17 RPM. A quick disconnect clean out shall be provided on the hose reel with a minimum opening of four (4) inches. The hose reel shall be mounted on a tubular steel frame, located 8 feet above floor level, and positioned at the rear door of a typical 40 ft transit vehicle. Our cleaning wand shall be aluminum with a minimum of 3 1/2 inches diameter, minimum wall thickness of .065 inches and equipped with a replaceable tip. The wand shall be 48-inch long with a 30-degree bend at the hose end and with a 360 degree swivel joint for ease of turning the wand while cleaning under the seats. The wand shall have handles that provide for easy of use by a left or right handled operator. With the forward handle containing the two button control consul for easy of operating the reel.

    b. A two (2)-inch outlets shall be provided for fine cleaning mounted to the side of hose reel pedestal located at the front and rear door of a typical 40' transit bus. This outlet shall have a twenty-five- (25) foot, minimum diameter 2-inch heavy-duty anti-static vacuum hose. The hose shall coil and hang on a heavy duty hose rack located on the front of hose reel pedestal. Attachments shall include, 2 inch cleaning lance, floor tool, 2" round utility tool, 2-inch flat suction nozzle, rectangle suction brush, crevice tool and an On-Off switch with auto shutdown after 15 min. of operator cleaning time. Location of the hanging drops to be coordinated with the Transit Authority.

    c. The hose reel control stations shall be furnished with spring return START and STOP push-button and a green indicating run light for the Vacuum motor, hose reel UP-DOWN, push button selector switches and a red raised mushroom head EMERGENCY STOP push-button.

Push buttons, selector switches and indicator lights shall be heavy-duty industrial type or approved equal. The hose reel control station shall be rated NEMA 4/12.

d. Provide all conduit and wire from the vacuum system control panel to pumps and controls for a complete and operable package system.

6. Main Electrical Control Panel:

1. Pre-wired, 240/480 volt, 3 phases, 60 Hertz NEMA 4/12 rated main electrical control panel containing motor starters for the vacuum pump motors, full voltage reversing starters for hose reel motors, step-down transformer for control circuits, and digital display for alarm, timing functions and a programmable logic controller (PLC). All timing, alarm and logic functions shall be performed by the PLC; electromechanical relays are not acceptable. PLC shall be heavy-duty industrial type and have a minimum 512 megabytes instruction memory and a flash card memory back up. The main control shall include touch screen operator interface screens. The operator screen enclosure shall display total run hours, run hours between service intervals and current system pressure level. Panel enclosure shall be equipped with a lockout/tag-out type disconnect switch. The panel cover shall include a positive action, red, emergency stop button with oversize head. A white pilot light to indicate power to panel. The panel shall be UL.ULC, CSA or ETL listed with approval labels.

2. Circuit breakers shall protect all motors and the motor starter shall contain overload protection in all ungrounded conductors. Motor starters shall be NEMA Rated heavy-duty industrial types.

3. A single CAD generated system wiring diagram showing all internal panel wiring, external wiring between components, wire sizes and colors and breaker rating and terminal designations shall be provided.

4. Labeled terminal strips shall be provided for all external control wiring and shall correspond to terminal numbers on the CAD system drawing. Nameplates shall be placard engraved lettering

PART 3. EXECUTION

3.01 EXAMINATION

A. Prior to beginning installation, examine area to receive Bus Vacuum System. Verify that critical dimensions are correct and that conditions are acceptable.

    1. Do not proceed until unsatisfactory conditions have been corrected.

B. Inspect delivered equipment for damage from shipping and exposure to weather.

C. Compare delivered equipment with packing lists and specifications to assure receipt of all items listed.

3.02 INSTALLATION

A. Perform work under direct supervision of Foreman or Construction Superintendent with authority to coordinate installation of scheduled equipment with Architect or designated representative.
B. General: Install Bus Vacuum System according with plans, shop drawings and to manufacturer's instructions.
    1. Set Bus Vacuum System securely and accurately in place; thumb, level and properly aligned. Anchor as required for secure operation.
C. Vacuum pump shall be installed on 4" housekeeping pad with a perimeter or 3" beyond final dimension of equipment.
D. Upon completion of work, finish surface shall be free of tool marks, scatches, blemishes and stains.

3.03 FIELD QUALITY CONTROL

A. Testing: After final connections are made and prior to authorizing payment, specified equipment shall be tested for compliance with specification in the presence of the Architect or designated representative using acceptance procedures provided by the manufacturer.

3.04 CLEANING

A. Touch-up damage to painted finishes.
B. Wipe and clean equipment of any oil, grease, solvent and make ready for use.
C. Clean area around equipment installation and remove packing and installation debris from job site.
D. Notify Architect or designated representative for acceptance inspection.

3.05 TESTING

A. Testing: The system shall be considered acceptable if it can successfully clean a minimum of 15 buses without any failures. The manufacturer shall have a qualified representative present at site during the test period.

3.06 TRAINING

A. Direct the technical representative to provide specified hours of training to designated Owner's maintenance personnel in operation and maintenance of the following equipment. Coordinate, with Owner, training schedule and list of personnel to be trained.

1. Vacuum System single lane, 4 hours

B. Obtain from technical representative, a list of Owner's personnel to be trained on the equipment operations and maintenance.

END OF SECTION

CITY OF TORRANCE
3031 Torrance Blvd.
Torrance, CA 90503

Bid for Bus Wash and Vacuum Systems at the City Yard

DATE 3/5/2013

Review of the Whitting Bus Wash Systems Specifications

[X] Reviewed

[X] Corrections noted

[ ] Action not required

[ ] Revise & resubmit

[X] Approved as equal

[ ] Not equal

Reviewed by Art Estrada

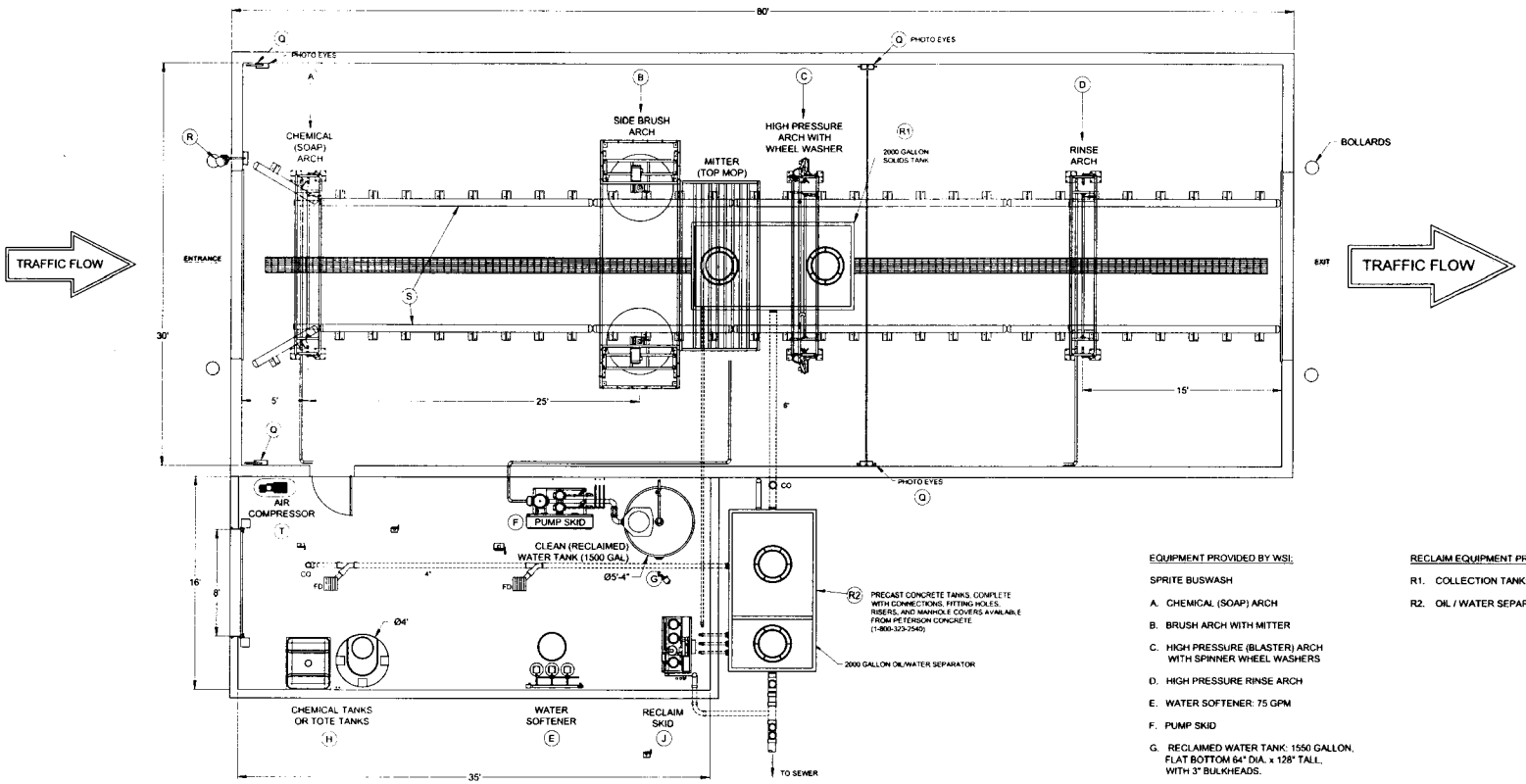
Question for Review

Please see our specification and drawing attached regarding our drive through bus wash equipment. Please note our use of T304 Stainless Steel for all frame components and the use of Polyethylene bristles.

Review Notes

Whitings System Inc. (Casey Craft's), submittal does qualify as an approved equal. However, his submitted specification does not mention a blow drying. Our Specification Calls for such system.

This review is only for general conformance with the design concept of the project and the information of the Bid Document. Corrections or comments made on the submittal during this review does not relieve the bidder from compliance with requirements of the Bid Specifications.



EQUIPMENT PROVIDED BY WSI:

SPRITE BUSWASH

A. CHEMICAL (SOAP) ARCH

B. BRUSH ARCH WITH MITTER

C. HIGH PRESSURE (BLASTER) ARCH WITH SPINNER WHEEL WASHERS

D. HIGH PRESSURE RINSE ARCH

E. WATER SOFTENER: 75 GPM

F. PUMP SKID

G. RECLAIMED WATER TANK: 1550 GALLON, FLAT BOTTOM 64" DIA. x 128" TALL, WITH 3" BULKHEADS.

H. CHEMICAL TANK(S) OR TOTES: 850 GALLON LOCATION TO BE DETERMINED - 4' Ø

J. RECLAIM SKID: 100 GPM

Q. 4 PAIR PHOTO EYES

R. TRAFFIC LIGHT AT ENTRANCE

S. 6" GUIDE RAILS: FULL LENGTH

T. AIR COMPRESSOR: 15 CFM

RECLAIM EQUIPMENT PROVIDED BY CONTRACTOR:

R1. COLLECTION TANK: 2000 GALLON

R2. OIL / WATER SEPARATOR (CLARIFIER): 2000 GALLON

GENERAL INFORMATION

- ALL ELECTRICAL AND PLUMBING POINT TO POINT AND FINAL CONNECTIONS ARE THE CONTRACTOR'S RESPONSIBILITIES.
- COMPLIANCE WITH APPLICABLE CODES IS THE CONTRACTOR'S RESPONSIBILITY.
- PERMITS AND INSPECTIONS ARE THE CONTRACTOR'S RESPONSIBILITY.
- UTILITIES TO BE SUPPLIED BY CONTRACTOR.
- A DEDICATED ANALOG PHONE LINE IS REQUIRED FOR PUMP SKID CONTROL PANEL.
- A DEDICATED REGULATOR IS REQUIRED FOR EACH GAS APPLIANCE.
- S PECIFICATIONS ARE FOR 480 VOLT, 3ϕ, 60Hz ELECTRICAL SERVICE .

PRELIMINARY PLAN

FOR GENERAL ORIENTATION ONLY
SIGNIFICANT DIMENSIONS GIVEN

WHITING SYSTEMS, INC.
9000 HIGHWAY 5 NORTH
ALEXANDER, ARKANSAS 72002
U.S.A. (501) 847-9031

DRAWN: JCS
DATE: 7-9-10
SCALE: -
SHEET: 1 OF 3

TITLE: *CONCEPTUAL 4 ARCH BRUSHED SPRITE BUSWASH*

DWG. NO: *GENERAL LAYOUT* REV: -

Whiting Systems, Inc.

9000 Highway 5 North
Alexander, AR 72002
501-847-9031

SmartWash® *Sprite*

Drive-Thru Bus Washer Specifications

SECTION 1:

1:01 CAPABILITY:

Fleet maintenance, capable of washing front, sides, and rear of large vehicles. Designed to fit individual customers' requirements. The washer shall remove all visible, heavy dirt accumulation and road film from all surfaces of the bus. This system shall be fully automatic by means of infrared fiber optic beams, starters, and overloads. If needed, washer controls may be overridden at any time by manual controls as may be desired for concentrated washing action.

1:02 OPERATION:

Bus enters wash bay 40-50 fpm which breaks first set off beams which then activates the first chemical arch thoroughly cleaning front, sides and rear of bus. The truck then breaks beams for the high-pressure blaster arch. In entry of arch, the blasters toggle towards the front of the truck and as the rear of the vehicle nears the exit of the arch, the blasters toggle back towards the rear of the truck. The truck then enters the high volume blaster arch-(If equipped for a friction type wash, the vehicle will then enter the side brush arch, see item "B" below) The truck then breaks the beams at the rinse arch for the final phase before exiting the bay. Undercarriage wash can be added to this process.

1:03 FRAME CONSTRUCTION AND FEATURES:

The frame shall be constructed of welded stainless steel tube and stainless steel angle iron. Stainless steel construction stress points should be reinforced and double welded. The frame of the blaster arch shall be covered with stainless steel sheets and aluminum splash shields shall be provided around the optional side brushes to prevent excessive water spray. All bolts, rivets, and fasteners shall be constructed of stainless steel. Operating components shall be easily accessible within the frame for maintenance.

A. Motors and Bearings:

All motors shall be totally enclosed, squirrel cage type, continuous duty wash-down rated stainless steel motors. Each motor shall be individually protected by manual reset adjustable range thermal overload relays with bimetallic, ambient compensated operation. Motor starter and control relays shall e heavy-duty industrial type, rated for 600 volts. All bearings must be non-lubricating and completely sealed.

B. Brushes: (Optional)

All brushes shall be made of polyethylene filaments and all brush ends shall be feathered to prevent damage to vehicle surface areas. All brushes shall be separately replaceable in no longer than 12" sections for brush wear. Side brushes shall be 60" in diameter respectively. All brush shafts shall be 4 ½" in diameter, flange bearing mounted, direct worm gear drive. A brush shaft with 3 ½" diameter is not acceptable. Brush rotations shall not exceed 125 rpm to prevent damage to the vehicle paint finishes and obstacles.

Note: A Roof Mop option is available where required.

C. Blaster System:
Each blaster head shall consists of a 15 degree stream, which creates a heavy impact to blast away heavy road grime. The blasters can effectively wash vehicles 2 feet away. Each blaster shall focus the water energy into the surface to eliminate the problems with destroying decals. Each Blaster is threaded into the stainless steel spray bar.

D. Detergent Coverage:
Detergent coverage on the front and rear of vehicles shall be achieved by toggling between soap arches, alternating the direction of the soap nozzles. The toggling shall be achieved through use of an air-actuated valve.

E. Piping and Nozzles:
Piping shall include ¾" schedule 80 pipe with 33 spray nozzles for detergent application and rinse cycles. Blaster nozzles shall utilize 1 ½" galvanized schedule 40 piping. All water nozzles and pipes shall be separately removable for cleaning purposes.

F. Compressed Air System:
The washer shall be capable of operating with 80 to 120 PSI, 3 CFM, air pressure through 3/8" air line. All air hoses/air components shall require no lubrication and shall be NFPA designed for continuous duty. Air cylinders shall be constructed from hard anodized aluminum and utilize carboxilated nitrile with Teflon piston seals. Air control components shall be located behind access panel and the main air hose shall have an automatic water filtration system.

G. Controls:
The control panel shall have numbered terminal strips for external wiring. Push buttons and selector switches shall be rated NEMA 4X. Internal wiring shall utilize conduits. Limit switches are not acceptable. Thermal overloads and motor starters shall be equipped with auxiliary contacts to switch off control circuit in event of any motor failure. The electrical control system shall be hardwired with a master control relay circuit for positive electrical disengagement, so all circuits will de-energize when the stop button is pressed for maximum safety. A separate power push button shall re-engage the master control relay for operation.

H. PLC:
The PLC shall include input and output modules and be ready for modem interface to permit the ladder program to be accessed directly from the factory in case of a breakdown. Modem shall be included and installed from factory. Batteries located in the local control panel shall automatically provide power to the main PLC in case of power failure and shall be capable of maintaining all software in memory for duration of four hours. During the duration of the power failure, the software program and associated processes residing within the PLC shall not be lost and after power is restored, the backup battery shall be automatically capable of being charged to its maximum level.

I. Final Rinse Arch:
Frame mounted, self-standing, automatic fresh water rinse arch shall be provided at wash bay exit. The rinse arch shall have a minimum of 19 stainless steel spray nozzles threaded into 1" galvanized schedule 40 pipe arranged to provide full rinsing coverage with fresh water over entire vehicle and capable of delivering 20 gallons per minute at 200 PSI. Piping shall be supported by a frame constructed of 2 x 2 x 1/8" stainless steel structural tubing welded to four stainless steel base plates.

J. Water Supply System:

Includes wash pumps, electrical panels, detergent distribution system, and miscellaneous equipment to fully support washer operation.

a. Pump skid: The main electrical panel shall be factory plumbed and wired and located on the pump skid along with the following pumps:

1) High-pressure: 40 HP, 150 GPM at 390 PSI. Multi-stage centrifugal, motor-stacked, chamber and impeller design, 80% efficient pump with water-resistant bearings and cartridge shaft seals.

2) 2 - Wash water: 5 HP, 20 GPM at 200 PSI. Multi-stage centrifugal, motor-stacked, chamber and impeller design, 80% efficient pump with water-resistant bearings and bellow shaft seals. The first pump will discharge fresh water for the detergent delivery system while the second pump delivers for to the final rinse arch.

b. Detergent distribution system: Multiple washer detergent distribution system, consisting of chemical metering pumps and a bulk storage tank, shall be capable of injecting pre-soak detergents to pressure side of wash water pump. Metering pumps injecting detergents to suction side of wash water pump are not acceptable. Detergent storage tank shall be made of high-density polypropylene.

K. Electrical System:

The entire wash system, pump skids and water reclamation system if needed shall be pre-wired and factory tested, except for field wiring to accommodate shipping. Electrical components shall be U.L. approved. Factory construction and installation shall meet Division 16 specification requirements. Provide wire markings and labeling per Section 16195.

CITY OF TORRANCE
3031 Torrance Blvd.
Torrance, CA 90503

Bid for Bus Wash and Vacuum Systems at the City Yard

DATE 3/6/13

Review of InterClean Equipment Company's Bus Wash Specification (XJ-404 Reclaim Bus Wash)

[X] Reviewed

[X] Corrections noted

[ ] Action not required

[ ] Revise & resubmit

[ ] Approved as equal

[ ] Not equal

Reviewed by Art Estrada

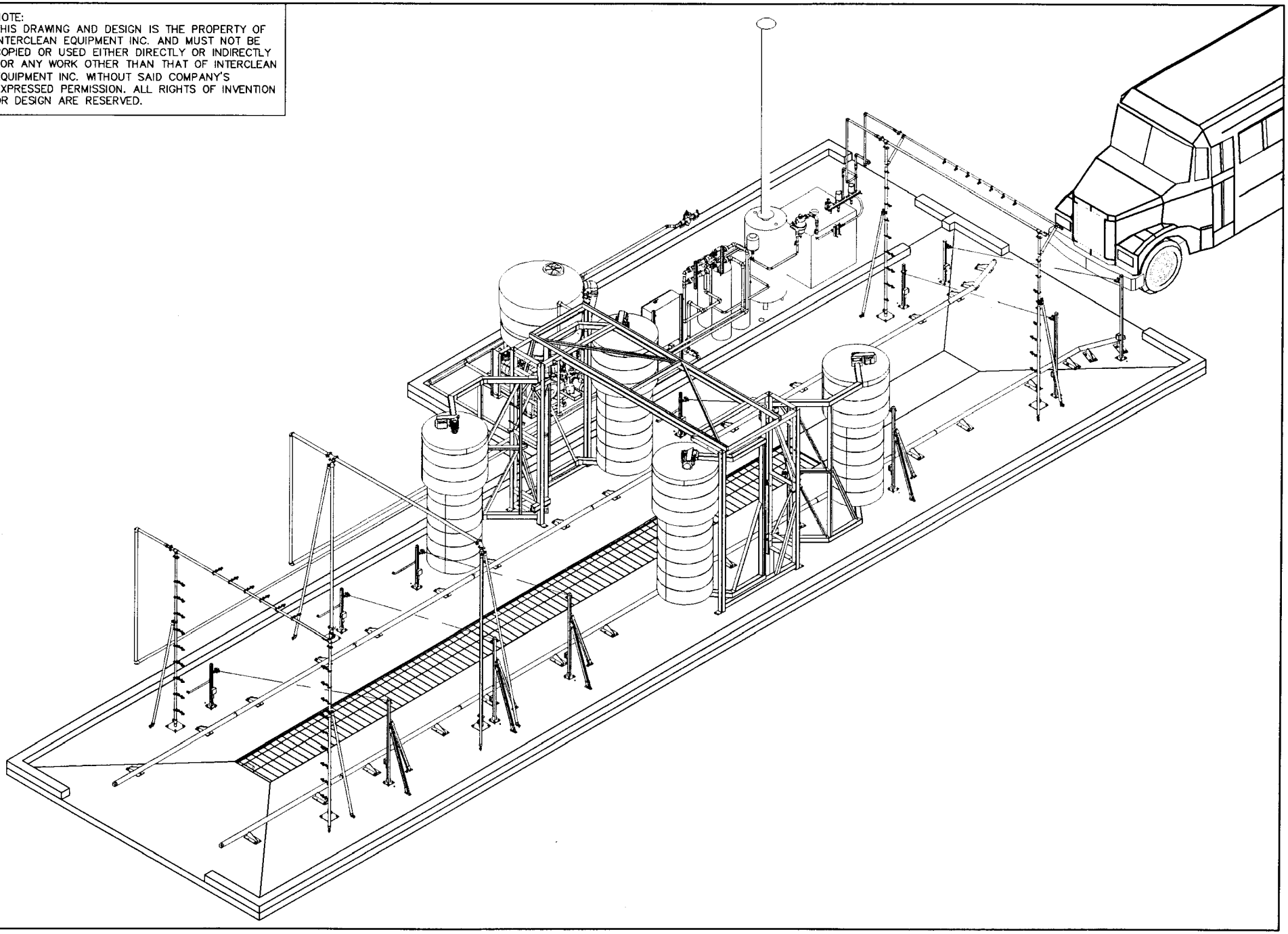
Question for Review

Review of InterCLean's Bus Wash Specifications for the XJ-404 Reclaim bus Wash for equal acceptance.

Review Notes

InterClean Equipment Company's system is a very well built system, however, the submitted specification does not mention the build material for the component arches or the framing of the brush structures. In order for this system to qualify as equal the structure must be built of 6061 Aluminum or better. The City of Torrance is very near the ocean and anything less than Aluminum structures can cause premature corrosion.

This review is only for general conformance with the design concept of the project and the information of the Bid Document. Corrections or comments made on the submittal during this review does not relieve the bidder from compliance with requirements of the Bid Specifications.



R.	DATE	DESCRIPTION	BY	APPR

InterClean Equipment, Inc.

DESIGN:	DRAWN:
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SCALE: NO SCALE	

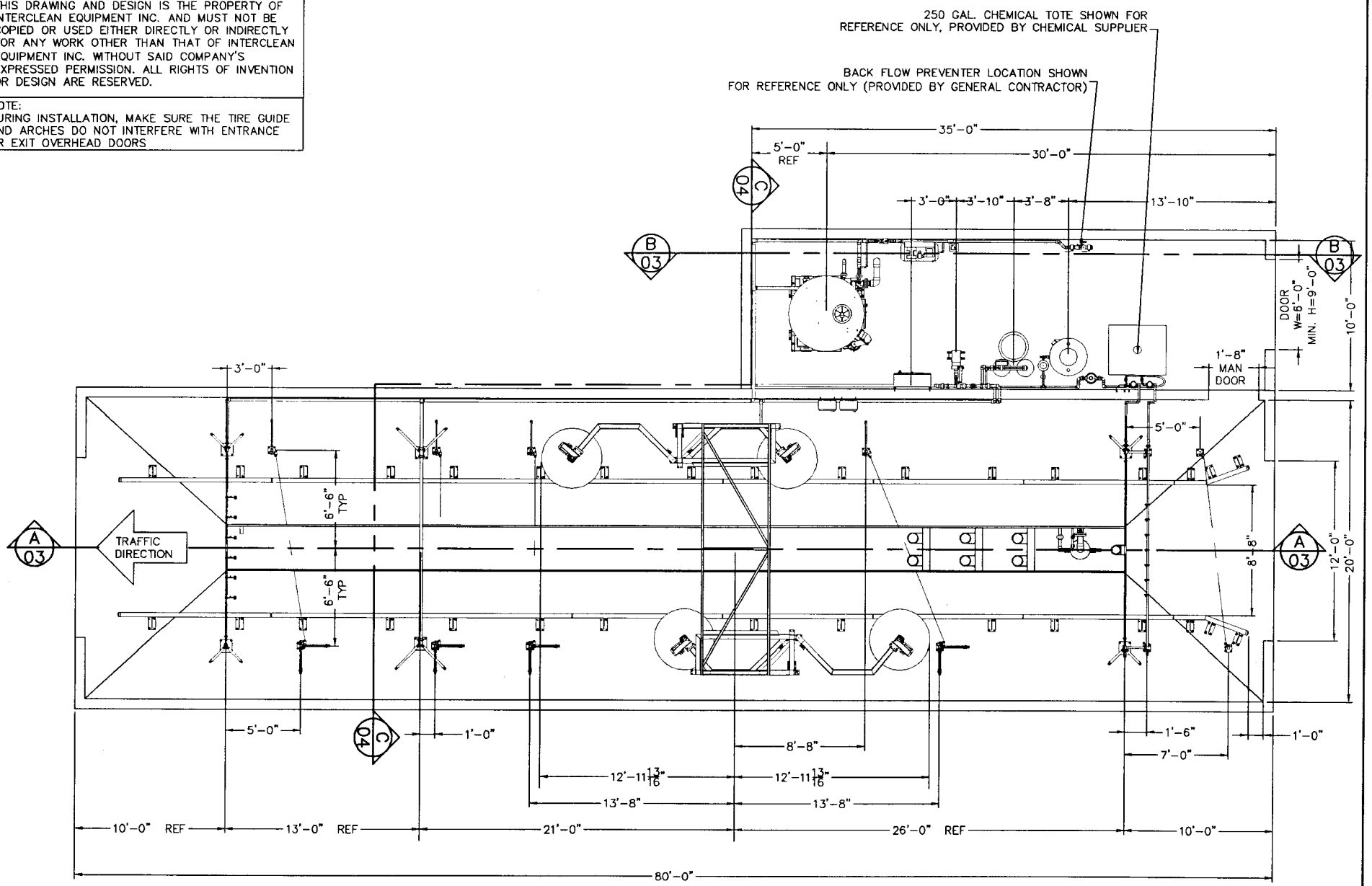
BUS WASH, XJ-404
RECLAIM WATER SYSTEM
3-D VIEW

DATE: MM/DD/YY
PART NO: #LYUS-XJ-01
WEIGHT:

PROJECTS\Standard\1_US\2Reclaim\System\2_BusWash\3_Brush\BrushBusReclaim1.dwg, 01_3D, 3/4/2009 2:37:47 PM, Susan, HPDJ1055CN.pc3

NOTE:
THIS DRAWING AND DESIGN IS THE PROPERTY OF INTERCLEAN EQUIPMENT INC. AND MUST NOT BE COPIED OR USED EITHER DIRECTLY OR INDIRECTLY FOR ANY WORK OTHER THAN THAT OF INTERCLEAN EQUIPMENT INC. WITHOUT SAID COMPANY'S EXPRESSED PERMISSION. ALL RIGHTS OF INVENTION OR DESIGN ARE RESERVED.

NOTE:
DURING INSTALLATION, MAKE SURE THE TIRE GUIDE AND ARCHES DO NOT INTERFERE WITH ENTRANCE OR EXIT OVERHEAD DOORS



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InterClean Equipment, Inc.

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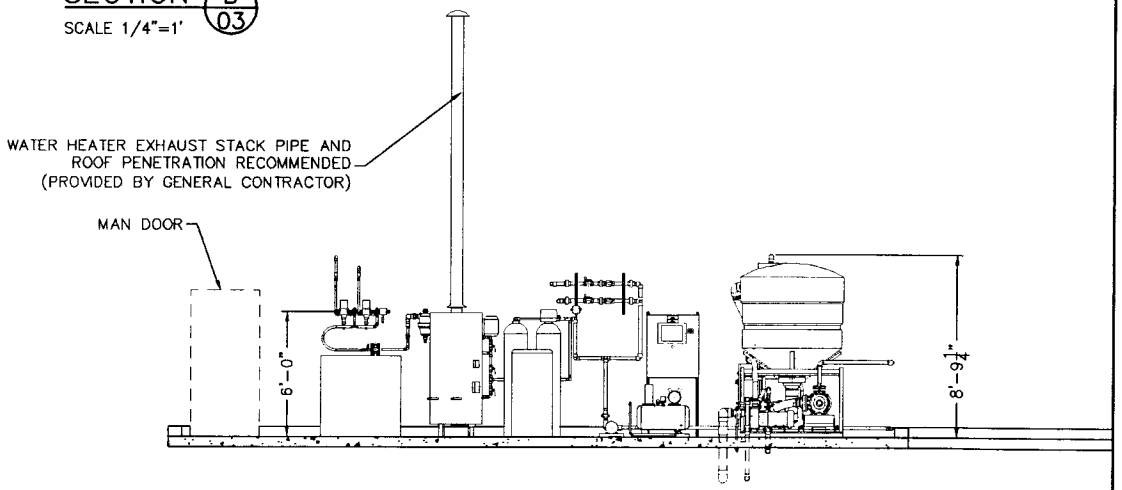
1/4"=1'	

BUS WASH, XJ-404
RECLAIM WATER SYSTEM
PLAN VIEW

DATE: MM/DD/YY
PART NO: #LYUS-XJ-02
WEIGHT:

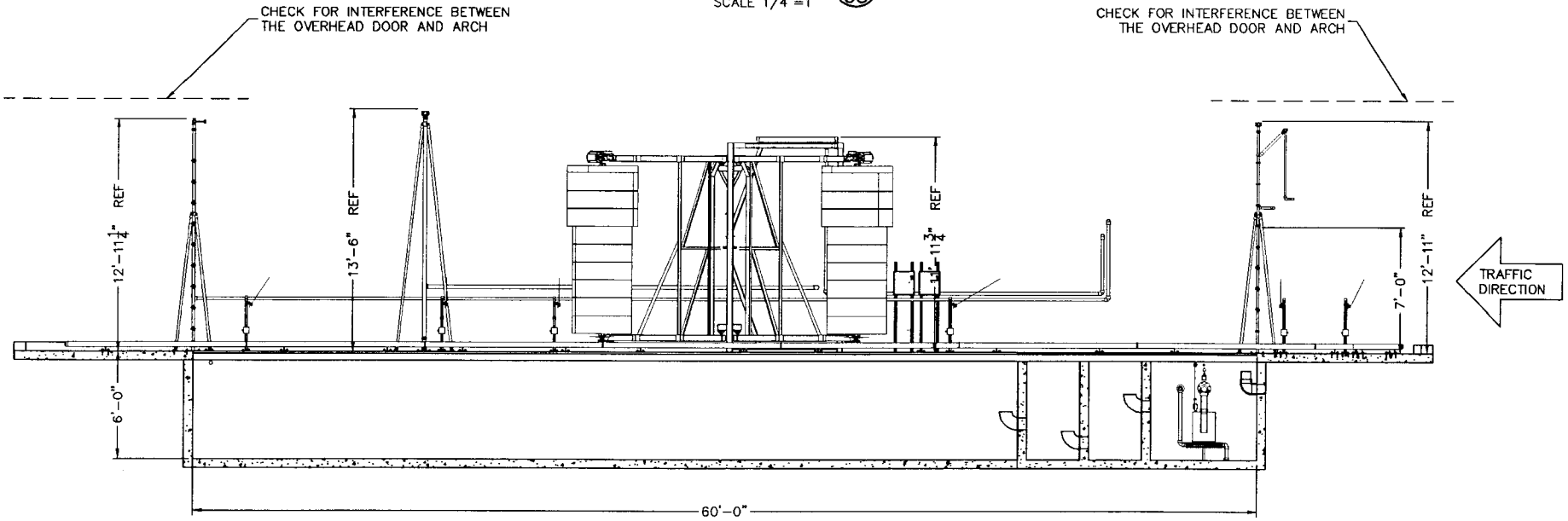
SECTION B/03

SCALE 1/4"=1'



SECTION A/03

SCALE 1/4"=1'



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InterClean Equipment, Inc.

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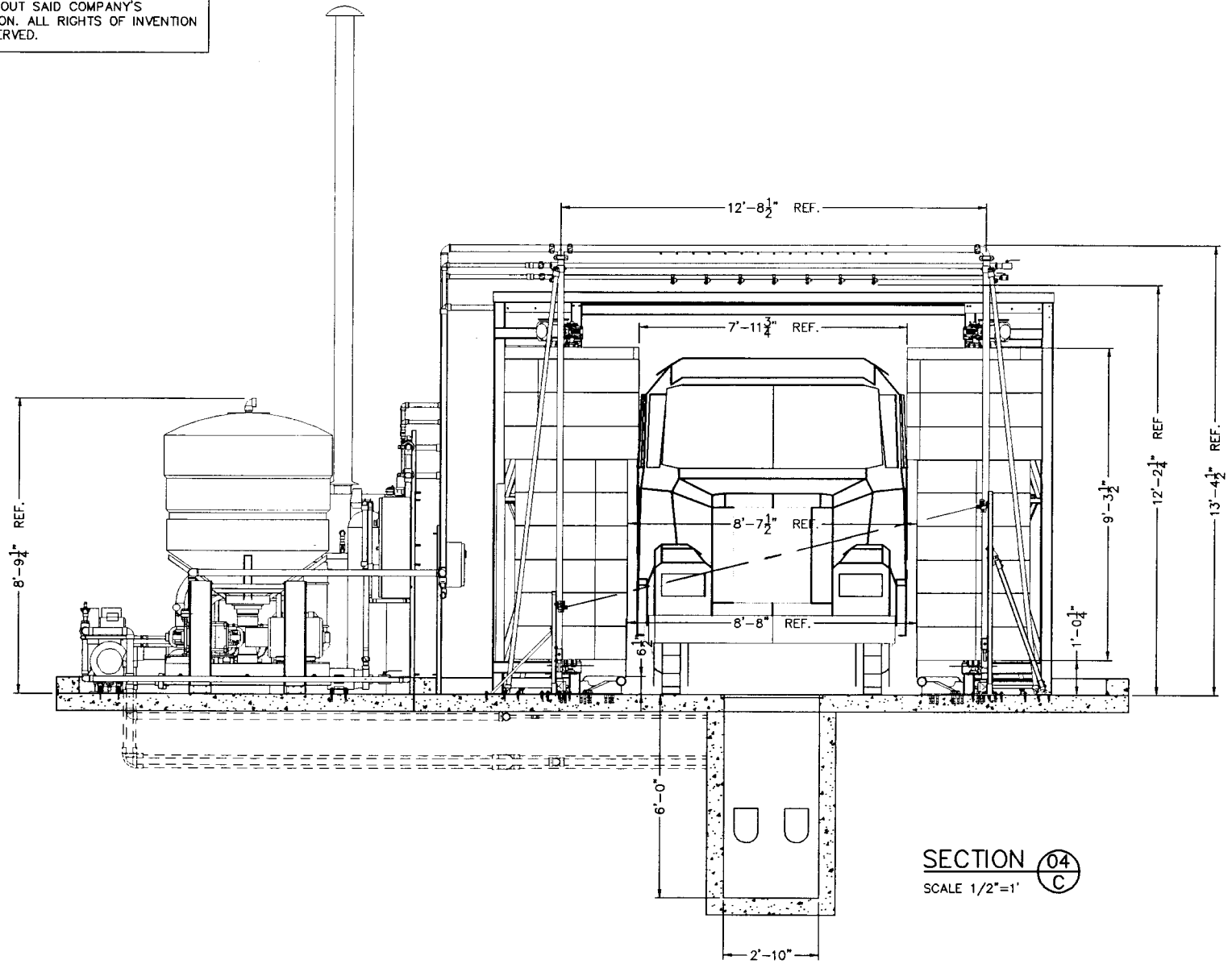
BUS WASH, XJ-404
RECLAIM WATER SYSTEM
SIDE VIEW

DATE: MM/DD/YY
PART NO: #LYUS-XJ-03
WEIGHT:



SECTION 04/C
SCALE 1/2"=1'

R.	DATE	DESCRIPTION	BY	APPR

InterClean Equipment, Inc.

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CHECK:	APPR:
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SCALE: XX	

BUS WASH, XJ-404
RECLAIM WATER SYSTEM
END VIEW

DATE: MM/DD/YY
PART NO: #LYUS-XJ-04
WEIGHT:

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1.7 WASH SYSTEM SUMMARY

1.7.1 Functional Summary

This Transit Bus Wash System consists of two identical drive-through Wash Bays, referenced as Wash Bay 1 and Wash Bay 2. Each Wash Bay has its own System Controller, wash equipment, and chemicals and operates independently of the other. A common Equipment Area holds the computers, chemicals and other equipment that serve their respective Wash Bay.

This manual describes the functions of one Wash Bay with the understanding that the text also applies to the other Bay. All component descriptions and labels referenced in this manual apply equally to both Wash Bays, except where noted.

The Wash System utilizes chemical application, rotating and articulated brushes, fixed spray nozzles, fresh and reclaimed water to remove dirt from the bus. These are described briefly in this section of the manual and in detail in *Section 2: Wash System Description.*

This is a reclaimed water Wash System. Water that drains into the Settling Pit goes through a sediment removal process before it is reused at high pressure to clean the wheels and lower body panels of the bus and also to clean the front end of the bus. The rest of the wash process uses either heated or unheated fresh water from the municipal supply to clean the bus.

The Wash System starts automatically when the bus enters the Wash Bay. A photoeye sensor at the entry to the Wash Bay detects the presence of the vehicle and signals the system to start. Two wash cycle options are available, selectable from the Touch Screen terminal. Aside from selecting the wash options, no further authorization of the wash cycle is required.

As the vehicle enters the Wash Bay, hot fresh water is mixed with concentrated alkaline-based detergent in correct proportion and is applied to the vehicle through the Chemical Arch and Spray Bar.

The bus then proceeds into the Brush Section where four vertical brushes rotate out and spin against the bus body to remove dirt loosened by the chemical application. The two wash options apply to the Brush Wash Section; Option 1 brushes the front, sides, and rear of the bus while Option 2 skips the front and brushes only the sides and rear. This is useful if there are racks or other projections on the front of the bus that may be damaged by the rotating brushes.

Following the Brush Section, the front of the bus is washed down with reclaimed water, then the wheels and lower body panels and under the chassis are washed, also with reclaimed water. The bus then receives a final rinse with cold fresh water.

The application of chemicals and high-pressure wash processes are controlled automatically by the System Controller (computer), plus photoeye sensors that monitor the location and speed of the bus as it drives through the system.

1.7.2 Fresh Water System Summary

The Fresh Water System receives water from the municipal supply through a backflow preventer that allows water to flow only into the Wash System. This ensures that (possibly contaminated) water cannot flow back out of the Wash System and into the municipal supply if the pressure in the main drops below the Wash System pressure. Do not bypass the backflow preventer.

The fresh water serves three basic systems: (1) the chemical wash system, (2) the brushes and rinse system, and (3) the Settling Pit. Most of the fresh water entering the Wash System is pumped through the Chem/Rinse Booster Pump to the Chemical Wash System and the Brush Module and Rinse Arch.

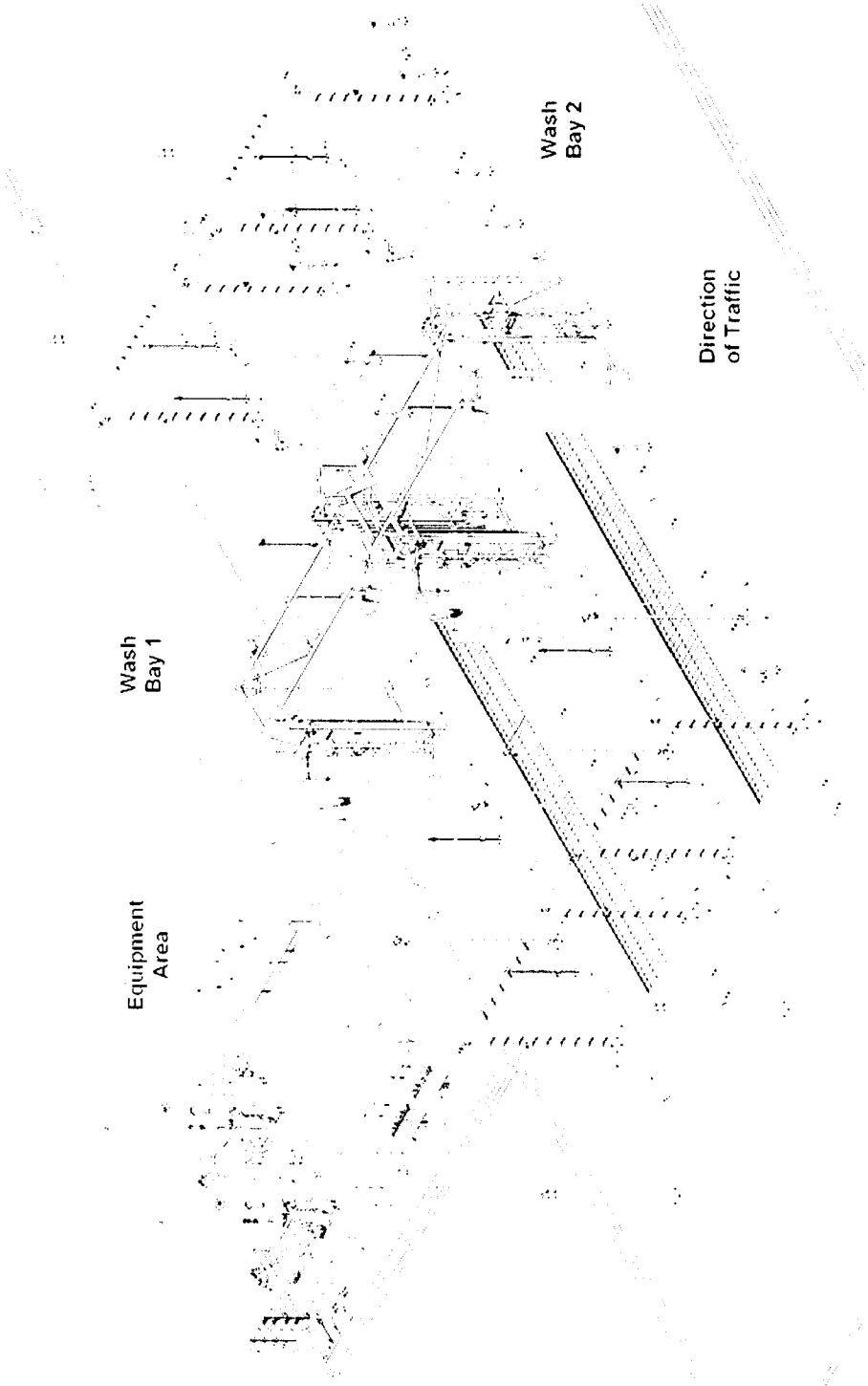

Figure 1- 1 Wash System Overview

1.7.3 Reclaim Water System Summary

Parts of the wash cycle use water that has been reclaimed from the Settling Pit in their processes. This water has had sediments removed and is suitable to be applied at high pressure through the Front Wash Arch, Top Wash Spray Bar, and Wheel Washers. This reduces the volume of water the wash site must purchase from the municipal supply.

1.7.4 Chemical Wash Cycle Summary

This Wash System uses a single-step chemical application to loosen dirt from the bus body. The process sprays alkaline-based detergent solution onto the vehicle as it enters the Wash Bay. A photoeye (PE1) detects the presence of the vehicle at the Wash Bay entrance. Fresh water is mixed with concentrated detergent in exact proportions through two chemical injection pumps to produce the soap solution. The solution is sprayed onto the truck body through the Chemical Wash Arch and the Chemical Rear Spray Bar. A second photoeye sensor (PE2) controls the Chemical Rear Spray Bar.

1.7.5 Brush Wash Cycle Summary

The Brush Wash Section follows the chemical application. Four vertical brushes spinning at approximately 80 rpm wash the bus body as it passes through this section. The four brushes are independently controlled by the System Controller and four vehicle sensing photoeyes. The brushes are kept wet by four vertical spray bars.

The brushes are arranged as two on each side of the line and are referred to as the Left Front (LF), Left Rear (LR), Right Front (RF), and Right Rear (RR) Brushes.

The two options available for washing the bus affect the way the two front brushes behave during the cycle. The first option, Option 1, rotates the two front brushes all the way out to the center of the Wash Bay where they contact the front of the bus as it drives through. The moving bus pushes each front bus to the side where they continue to wash the sides of the bus until it drives out of range. With Option 2, the two front brushes only rotate into the line far enough to sufficiently contact the bus where they mainly wash the sides as the bus passes through. This option provides protection if there are significant projections on the front of the bus, such as bicycle racks.

Select either Option 1 or Option 2 before the start of the wash cycle from the Wash Selection Screen on the Touch Screen terminal. The Wash System remains in the last-selected option until it is changed so you don't have to enter the option before every wash if the desired option is currently set.

The two rear brushes are not affected by the option selection; they perform the same wash routine for every cycle. With the bus in position, the rear brushes swing into the line enough to contact the bus and start washing the bus sides. When the rear of the bus approaches the rear brushes, the bus driver is signaled to stop the bus for two seconds and then proceed. This gives the rear brushes time to accelerate into the Wash Bay without missing the rear corners of the bus surface. The rear brushes then proceed to rotate out to the center of the bus to complete their cycle.

The Traffic Light at the Wash Bay exit turns red when the driver should stop the bus for two seconds and then proceed.

1.7.6 Front Wash Cycle Summary

After the brushes, the bus drives through the Front Wash Arch which consists of 15 fixed spray nozzles arranged across a horizontal spray bar. Reclaimed water from the EQ Tank is pumped out to the nozzles by the High Pressure Pump. The nozzles are adjusted at 30° from the perpendicular to concentrate on the front of the bus and nothing is sprayed directly onto the bus sides here. This provides cleaning of the front of the bus if wash Option 2 is selected. Refer to the Brush Wash System Summary above.

1.7.7 Top Wash and Wheel Wash Cycle Summary

Following the Front Wash Arch, the Top & Wheel Wash Arch uses a horizontal spray bar on top and four fixed spray nozzles on each side of the wash lane to clean the bus top, wheels and lower body panels with reclaimed water at a nominal 300-320 psig pressure. This arch remains active as long as the bus is in range.

1.7.8 Rinse Cycle Summary

The Rinse Arch provides a final rinse of the bus as it leaves the Wash Bay. Twenty-four double swivel nozzles rinse the bus with water supplied through valves in the Rinse Module (DY05-031_1). The Arch provides three-sided coverage of the bus.

1.7.9 Wash Options / Wash Types

Two wash cycle options are available, called Option 1 and Option 2. The desired option must be selected before driving the bus into the Wash Bay. The Options are retentive; the Wash System continues to use the last-selected option until it is changed. The options affect only the Front Brush part of the wash cycle.

The wash Options are selected on the Wash Selection screen on the Touch Screen terminal. Refer to *Section 2.3.5 Main Screen – Wash Selection Screen* for details on accessing the Options.

Option 1:

The Wash System uses all four brushes to wash the front, sides, and rear of the bus. This option should not be selected if the bus has significant obstructions, such as a bike rack, mounted on the front of the bus. The sides and rear brush washing of the bus is not affected.

Option 2:

The Wash System does not rotate the Left Front and Right Front brushes out to the center of the line but keeps them in the side washing position. Select this option if there are significant obstructions mounted on the front of the bus. The sides and rear brush washing of the bus is not affected.

1.7.10 Wash Modes

The Wash System functions in four modes of operation. The current mode the System is in is determined by the current mode selected through the Touch Screen Terminal. The Touch Screen is the user interface to the System Controller. A detailed description of the Touch Screen and the wash modes follows in *Section 2: Wash System Description.*

The four operating modes are:

Auto Mode

This is the default or normal operational mode of the Wash System. All wash functions are enabled according to the current wash recipe (which can be viewed on the Touch Screen).

Standby

The Wash System is running but will not wash a vehicle in this mode; no Wash Bay functions operate. For example, none of the Aches spray water or detergent in Standby mode and the Brushes do not operate but non-wash functions, such as filling the Fresh Water Storage Tank, may still occur.

Manual

You cannot wash a vehicle in this mode but some components/systems may be operated manually through functions on the Touch Screen Terminal. Some semi-automatic operations may occur in the background when you perform a manual function. For example, if the brushes are manually enabled the System will automatically turn on the Chem/Rinse Booster Pump to keep the brushes wetl, and so on.

Off

The entire Wash System is shut down. When power is first applied to the System or when an Alarm occurs, the System reverts to OFF mode. You should manually set the System to this mode when making repairs to the Wash System.

1.7.11 Wash Authorization

All vehicles entering the Wash Bay automatically receive the default wash type currently selected on the Wash Selection screen on the Touch Screen terminal. Basically, this will be wash Option 1 or wash Option 2. Refer to *Section 1.7.9 - Wash Options* above. Select the Option you want for the next wash cycle before the vehicle enters the Wash Bay.

The Wash System does not require any additional authorization other than the vehicle driving into the Wash Bay. Photoeyes throughout the Wash Bay detect the presence of the vehicle at that point in the Bay and the System proceeds automatically.